

the agent which had transformed common Phosphate of Lime into a soluble Bi-Phosphate or Superphosphate.

The analysis mentions 1.8 per cent. of Soluble Phosphoric Acid; this cannot be attributed to the action of Sulphuric Acid on the original Phosphates. Nobody need however be astonished at its presence who knows the action of Ammoniacal Salts on Phosphates. Ammoniacal Salts, especially Sulphate of Ammonia, dissolve pretty readily Phosphate of Lime, and to this fact the great effect of Peruvian Guano must to some extent be attributed. Peruvian Guano, as we know, contains Phosphate of Lime besides Ammonia; if this article is mixed with Sulphate of Lime (Plaster of Paris) or applied to a soil which contains originally Plaster of Paris, Sulphate of Ammonia is formed, which acts as a solvent to the Phosphate of Lime. We even know by experiments made with mixtures of Peruvian Guano and Mexican, (pure Phosphate of Lime,) that the Sulphate of Ammonia which is formed from 100 lbs. of Peruvian Guano makes available not only the Phosphate of Lime which these 100 lbs. contain, but that it acts also on additional qualities of Phosphate of Lime, which the Mexican Guano contained, and that for this reason the application of a mixture of Peruvian Guano and Mexican is in all cases far more economical and rational than the application of Peruvian Guano alone, provided that the soil is deficient in Phosphoric Acid.

Dr. Stewart shows Ammoniacal Salts to be present in C. B. DeBurg's Super Phosphate of Lime, and the presence of 1.8 per cent. of Soluble Phosphoric Acid must therefore be the consequence of the action of these Ammoniacal Salts on Phosphates; the absence of Sulphuric Acid, or any other stronger acid than Phosphoric, excludes every other reason for its presence. But if this is the case, (and no other case is possible from the analysis,) we will at once perceive a great mistake as to the valuation of the article. The value of the Ammoniacal Salts contained in the article is first estimated, then the value of its Phosphates, and finally the value of the Soluble Phosphoric Acid, which estimated to be equivalent to five times the proportion of Bone Phosphate of Lime that it represents. By these means the analyst estimates first the agents, which are Ammoniacal Salts and Phosphates, and secondly their reciprocal effect which produced Soluble Phosphoric Acid. Such a valuation is, however, totally wrong and liable to mislead farmers and Purchasers of this article. A hotel keeper who would charge for the beef and for roasting it, and finally for the resulting roast beef, would act on the same principle as that by which the money value of this article is estimated.

If I make "the most liberal allowance," as Dr. S. did in estimating the money value of this "fertilizer," allowing \$25 for